A study on Comparative Analysis of Gold Options & Gold Futures in Indian Derivatives Market

Research Protocol

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ABSTRACT

Present research is an attempt to get a deep understanding of gold options & gold futures along with studying the trading strategies of options & futures. Every investor aims at making profit and avoiding risk, so in this research we make a critical analysis of various trading strategies to identify the situations in which a strategy is best suited and leads to profit. Also, this research tries to identify the various factors affecting trading decisions relevant to gold options and gold futures along with making a comparative analysis of their trading volumes on MCX. The gold futures contracts trading on MCX are: Gold, Gold Mini, Gold Guinea & Gold Petal. The gold option contract is based on gold futures (1 KG) as Underlying asset. Even after more than 30 months of launch, gold options are still not popular among investors. Investors don't have complete knowledge about specifications of options contracts and trading strategies using options & futures. This research tries to fill that knowledge gap and provide a guide book to investors. This research will be a descriptive & analytical research. Both primary data & secondary data will be used for this study. Primary data will be collected through questionnaires. This study will be a time frame study. The data of trading volumes of gold options & gold futures will be collected through MCX website for the time period of Oct 2017-Sep 2022. In this time period, we will analyse & compare the trading volumes of gold options & futures.

Keywords: Gold options, Gold futures, Trading Strategies, MCX, Derivatives.

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1. INTRODUCTION

Gold is primarily a monetary asset and partially a commodity. Gold is world's oldest international currency and an important element of world monetary reserve. In India purchase of gold is considered an investment opportunity and a measure to reduce inflationary effects. For Indians gold is a symbol of wealth and status. Gold is adored for its beauty, stored for its liquidity and bought for its investment qualities. India has emerged as a number one consumer for gold. India depends on gold imports to meet its demand.

The risk of buying gold has increased due to increased price volatility caused by new economic policy 1991 and globalisation. To hedge against increased price volatility certain derivative instruments have been introduced in India. Gold futures were launched in 2003. Futures was used to hedge until SEBI allowed option trading from 26th March 2017. On the occasion of "Dhanteras (October 17,2017)" the finance Minister launched the option contracts on gold.

The main purpose of introducing gold options & futures is to hedge the risk associated with gold price changes. In India, where demand for gold is high, derivative instruments like gold options & futures are needed to protect various stakeholders like mining companies, market intermediaries, merchandisers, jewellers and designers, importers and exporters, bullion and jewellery traders and customers from the price risks.

This research is an attempt to get a deep understanding of gold options & gold futures along with studying the trading strategies of options & futures. Every investor aims at making profit and avoiding risk, so we make a critical analysis of various trading strategies to identify the situations in which a strategy is best suited and leads to profit. Also, this research tries to identify the various factors affecting trading decisions relevant to gold options and gold futures along with making a comparative analysis of their trading volumes on MCX. The gold futures contracts trading on MCX are: Gold, Gold Mini, Gold Guinea & Gold Petal. The gold option contract is based on gold futures (1 KG) as Underlying asset. Gold options in India are European style options where the buyer can exercise the right solely on the specific date that is the date on which the option contract expires.

1.1. What is a derivative contract?

A derivative contract is an enforceable agreement between two parties where the value of the contract is based or derived from the value of an underlying asset. The underlying asset can be

a commodity, stock, precious metal, currency, bond, interest rate, index, etc. These are used to hedge any unforeseen risk and commonly used by various types of business and individuals with their different objects. In the present scenario the derivative instruments are an essential part of the Modern-day finance. A rice farmer sells his harvest at a future date at a pre-determined price to eliminate the risk of fall in prices, is a good example of a derivative contract. The price of this derivative is driven by the spot price of rice which is the "underlying asset".

Section 2(ac) of Securities Contract Regulation Act (SCRA) 1956 defines Derivative as:

(a) "a security derived from a debt instrument, share, loan whether secured or unsecured, risk instrument or contract for differences or any other form of security"
(b) "a contract which derives its value from the prices, or index of prices, of underlying securities".

1.2. THE MARKET PARTICIPANTS

The derivatives market has the following main participants:

1.2.1. Scalpers/Day Traders are those participants who take positions in futures contracts for a single day and liquidate them prior to the close of the same trading day. The scalpers have the shortest time horizon. They hold their positions for a few minutes while day traders close their positions before the end of trading each day. Both the scalpers and the day traders attempt to make profit out of the intra- day movement in commodity futures prices. They do not carry over their position to the next trading day. These market players provide liquidity in derivatives market due to large volumes of transactions undertaken by them.

1.2.2. Hedgers are essentially players with an exposure to the underlying asset and associated price risk – producers or consumers who wish to transfer the price risk on to the market. The hedgers simultaneously operate in the spot market and the derivatives market. They try to reduce or eliminate their risk by taking an opposite position in the derivatives market on what they are trying to hedge in the spot market so that both positions cancel one another. They operate in the spot market to buy or sell the physical commodity, and in the futures market to offset any loss arising out of price fluctuations in the spot market.

1.2.3. Speculators are traders with no genuine commercial business to the underlying asset; they do not hedge but trade with the objective of making profits from movements in prices. The speculators generally assume higher risk and also expect a higher return on their investments. They do not have any real need to buy, sell or take delivery of the actual commodities. They wish to liquidate their positions before the expiry date of the contract and carry out a purely financial transaction. Due to the margin system, speculators operate in the futures market with minimum investments. For instance, upfront initial margin of 5 percent (or less) of the value of the contract provides speculators with substantial leverage. The speculators may be professional institutional investors dealing in big contracts or small individual traders who trade on their own accounts. The speculators are supposed to provide market liquidity as the number of those seeking protection against declining prices is rarely the same as the number of those seeking protection against rising prices. In the financial media, speculators are frequently called as investors and non-commercial players.

1.2.4. Arbitrageurs are traders who buy and sell to make money on price differentials across different markets. They simultaneously buy or sell the same commodities in different markets. Arbitrage keeps the prices in different markets in line with each other. Usually, such transactions are risk-free.

1.2.5. Brokers typically act as intermediaries and facilitate hedgers and speculators. A derivative broker is a firm or individual who acts as a go between to buy or sell derivative contracts on behalf of clients – for a commission.

1.2.6. The Exchange is a central place (physical or virtual) where market participants trade standardized futures & options contracts. At present there are 5 national commodity exchange in India along with many regional exchanges.

1.2.7. Regulator oversees the working of the exchange. The Forward Markets Commission (FMC) is the regulatory authority for the commodity derivatives market in India. It is merged with SEBI with effect from 29 September 2015.

1.3. The need of Derivative market

1.3.1. Risk Management:

The price risk management (also called hedging) is considered to be the most important function of a derivatives market. The hedging is used to manage price risks. It allows transfer of price risk to other agents who are willing to bear such risks (such as speculators). The hedgers, in principle, buy futures contracts for protection against rising commodity prices and sell futures for protection against falling prices or to get a guaranteed price in the future. Hedgers use futures market to protect themselves against price adverse changes and are often interested in taking or making physical delivery of the underlying commodity at a specified price.

1.3.2. Efficiency in trading:

Derivatives trading leads to improve the market efficiency. Derivatives trading provides leverage as a trader can take a short or long position by paying margin money only while for trading in spot market trader needs to pay full price of the security\commodity. Traders usually take more positions in derivatives market than spot market and it brings more liquidity in market. Thus, improves market efficiency. The derivatives attract many bright, creative, well-educated people with an entrepreneurial attitude to become hedgers & speculators.

1.3.3. Price discovery:

The continuous flow of information makes the process of price discovery. For instance, the price of March futures contract of Mustard seed will reflect the opinions of buyers and sellers about the value of the Mustard seed when the contract expires in March. The March futures prices may go up or down with the availability of new information. The price signal can provide a direction to a farmer about what a commodity will be worth at a future point of time and, on the basis of future prices, he can take decisions on what to produce. If price signals given by long-duration new season futures contract of Mustard seed mean high prices in the future, the farmers can allocate more land/resources for growing Mustard, and vice versa. It leads the flow of information from futures market to spot market & thereby helps in price discovery.

1.4. Types of Derivative instrument

1.4.1. Forward contract

A forward contract is a non-standardized or customized contract between two parties to undertake an exchange of the underlying asset at a specific future date at a pre-determined

price. It is a bilateral agreement whose terms are negotiated and agreed upon between two parties. It is transacted over-the-counter and is not traded on an exchange. The contract is executed by both parties on the due date by delivery of asset by the seller and payment by the buyer. It is simplest form of a derivative contract.

1.4.2. Future contract

Futures contracts are agreements made on a futures exchange to buy or sell a commodity at a pre-determined price in the future. The futures contracts are traded on regulated exchanges and the terms of the contract are standardized by the exchange. What is negotiated by the counterparties (buyer and seller of a futures contract) is only the price. The price is discovered through the offers and bids process. All contracts are settled by cash or physical delivery of the underlying asset on the expiry date of the contract.

1.4.3 Option contract

An option is a contract whereby one party (the holder or buyer) has the right, but not the obligation, to exercise the contract on or before a future date. The other party (the writer or seller) has the obligation to honour the contract. Since the option gives the buyer a right and the seller an obligation, the buyer pays the seller an amount called the option premium.

These are main types of options:

(A) Structure

(1) Call option: A call option gives the buyer the right to purchase the underlying asset at a pre-determined price (strike price), on or before the expiration date.

(2) Put option: A put option gives the buyer the right to sell the underlying asset at a pre-determined price (strike price), on or before the expiration date.

(B) Exercise style

(1) American options: American options can be exercised at any time between the date of purchase and the expiration date.

(2) European options: European option can only be exercised at the expiration date.

(C) Underlying Security/Asset

(1) Equity option: based on individual stocks

(2) Index options: based on stock market indices

(3) Foreign currency options: based on exchange rates of various currencies

(4) Commodity options: based on commodities such as guar, wheat, gold, silver etc.

(5) Options on Futures: An option on Futures is a right, not an obligation, to trade (buy or sell) a futures contract at a certain price by a certain date.

(6) Swaptions: A swaption is a contract in which market participants acquire an option to enter into a swap agreement. In call swaption the buyer pays a floating rate of interest and receives a fixed interest rate while in put swaption the buyer pays a fixed interest and receives a floating rate.

1.4.4. Swaps

A swap is an agreement between two parties to exchange cash (flows) on or before a specified future date based on the underlying value of commodity, currency, stock or other assets. Unlike futures, swaps are not exchange-traded instruments. Swaps are usually designed by banks and financial institutions that also arrange the trading of these bilateral contracts. Interest rate swaps and currency swaps are the most popular types of swap contracts.

1.5. Trading Strategies Using Futures & Options

A number of strategies are present & employed by the investors. The choice of strategy depends on investor's perception of market trends and his risk bearing capacity. Trading strategies also depend on underlying asset's price, volatility and marketability. These strategies are broadly classified as Directional strategies & Non-Directional strategies.

1.5.1. Directional Strategies

Directional strategies are employed when the investor has a strong conviction about the market or security's near-term direction. It means a strategy of going long if the market or security is expected to rise or taking short position if the market or security is expected to fall. On the basis of market trends these strategies are either Bullish or Bearish.

A. **Bullish strategies**

1) Buy call option
2) Sell put option
3) Long futures
4) Bull spreads

B. Bearish strategies

1) Sell call option
2) Buy put option
3) Short futures
4) Bear spread

1.5.2. Non-directional Strategies

Non-directional strategies are employed when the investor does not know whether the prices of underlying asset will rise or fall. These strategies are also known as neutral strategies. The selection of correct neutral strategy depends on the expected volatility of underlying asset price. Some popular neutral strategies are:

1) Straddle
2) Strangle
3) Arbitrage
4) Calendar
5) Butterfly
6) Strip
7) Box
8) Ratio call
9) Conversion
10) Collar

1.6. Origin of the derivatives market in India

India has a long history of derivatives trading in commodities. Commodity futures trading dates back to the ancient times. Researchers have found the mention of forward trading in commodities in Kautilya's *Arthashastra*. The Bombay Cotton Trade Association established the first organized futures market for cotton contracts in 1875. To regulate the commodity

trading in forward and futures contracts, Govt of India enacted the Forward Contracts (Regulation) Act in 1952. In 1953, FMC (Forward Market Commission) was established as a regulatory body of commodity derivatives trading. FMC was merged with SEBI (Securities Exchange Board of India) in September 2015.

In the late 1960s, severe droughts forced many farmers to default on forward contracts. This, coupled with abusive market practices by some traders, led to increase in commodity prices, and the Indian government suspended forward trading in several commodities. On the recommendations of Kabra Committee Report, the Indian government lifted the ban on commodity futures trading in 2003.

Introduction of commodity options created another milestone in the history of India's commodity derivatives. On October 17, 2017, trading in options contract with Gold (1Kg) futures contract as the underlying was launched, which was India's first commodity option contract. Later, other commodity options were also launched. Currently commodity options are traded on two exchanges: MCX & NCDEX. MCX provides option trading in Gold, Silver, Zinc, Copper & Crude Oil. NCDEX provides option trading in Chana, Guargum, Guarseed & Soyabean.

In 2018 SEBI allowed BSE & NSE to start trading in commodity derivatives. NSE launched the Commodities derivatives segment on October 12, 2018. Currently Futures are available on Bullion and Energy on NSE. BSE commenced commodity derivatives trading in Guarseed and Guargum on February 6, 2019. The major commodity exchanges are:

1. MCX (Multi Commodity Exchange)
2. NCDEX (National Commodity and Derivatives Exchange)
3. ICEX (Indian Commodity Exchange)
4. NMCE (National Multi Commodity Exchange)
5. ACE (Ace Derivatives Exchange)

2. RESEARCH PROBLEM

A study on comparative analysis of gold options & gold futures in Indian derivatives market.

3. LITERATURE REVIEW

- Bandivadekar and Ghosh (2003) studied the impact of the launch of index futures on spot market volatility on S&P CNX Nifty and BSE Sensex. They collected daily data for BSE Sensex and S&P CNX Nifty from January 1997 to March 2003. Index Futures were launched in 2000. So, this study included data of BSE Sensex & S&P CVX Nifty both before and after the launch of index futures. The research indicated a decline in spot market volatility after the launch of index futures. The reason behind that was availability of more information and news than before and reduced uncertainty caused by the old news. The study also found that the market wide volatility had fallen during this time period.
- Abhilash S. Nair (2008) also studied the impact of derivatives trading on the volatility of the underlying stock. This research included all companies (72) on which derivative trading started till May, 2005 and had been listed for more than 2 years. In this study he used an asymmetric GARCH model if the asset showed asymmetric response in the full period analysis. The study analyzed the daily closing prices of each stock from January 1997 to August 2007. The study confirmed presence of asymmetric response by most of scrips analyzed. Abhilash S. Nair agreed with Bandivadekar and Ghosh (2003) that launch of derivative trading has reduced the spot market volatility of the underlying stock.
- Chaihetphon and Pavabutr (2008) in their research examined the price discovery process of the gold futures contracts on Multi Commodity Exchange of India (MCX). Prices were collected for the period November 2003 to December 2007. That time 2 types of futures contracts were traded on MCX: Gold 1 Kg & Gold Mini (100 Gm). The research indicated price discovery in gold. Mini contracts played a major role in price discovery compared to Gold 1 Kg contacts. Mini contacts contribute to over 30% of price discovery in gold futures trade. Their trading volume was only 2% on MCX but were more informative.
- Easwaran and Ramasundaram (2008) examined the efficiency of commodity futures market in price discovery. Future & spot prices of four agriculture commodities (castor, cotton, pepper & soya) were collected from the MCX & NCDEX exchanges. The OLS method was used to estimate the equation for daily future prices. The interaction between volatility, return, market depth and trading volume was estimated econometrically. The study concluded that futures markets are not efficient in price

discovery. The price volatility in the spot market had no impact on the market conditions in futures market. The result indicated that the futures and spot markets are not aligned with each other. They were not efficient in hedging the price risk of commodities.

- Sanjay Sehgal et.al (2012) found different results than Easwaran and Ramasundaram (2008) findings. They examined the spot market volatility for seven commodities named guar seeds, turmeric, soybean, black pepper, barley, maize and castor seeds traded on NCDEX. The data period was from April 2004 to March 2012. GARCH model was used to analyze the relationship between futures market liquidity & unexpected volatility of spot market returns. In case of guar seed, turmeric, soybean, maize and castor seed the study confirmed that futures market liquidity trends to drive spot market volatility. In case of Black pepper reversed destabilization, effect was observed while in case of Barley futures market liquidity does not affect spot market volatility. Thus, the study found futures market efficient in price discovery and destabilizing effect.
- In 2009, Nilanjan Ghosh debated about the issues and concerns of commodity derivative in India in his research paper. In it he discussed the major themes to strengthen and expand the scope of commodity derivative trading and how futures trading affect spot market prices of commodity. He suggested need of debate about whether to expand the market scope of derivatives or limit them & pointed regulation and facility issues. Also throw light on issues of market micro-structure and futuristic markets.
- Naliniprava Tripathy (2010) investigated the expiration day and week effects on the nifty index futures. It was a time series research with a time period of November 2007 to November 2009. The chosen period consisted of index futures having 25 different expiration dates. This study also examined the day of the week effect in Bearish phase & Bullish phase. The study concluded that the day of the week effect was seen in Bullish phase but it was absent in Bearish phase. The research also found that the day of the week effect is not persistent in Indian derivative market only the trading volume increased near the expiration date.
- Shree Bhagwat et.al (2012) analyzed the Indian financial derivatives market & compared its position in global financial derivative market. For this, data had been collected on NSE & BSE from 2003 to 2012. Data was collected for number of contracts traded, product wise turnover & average daily transaction in both FO segment

and CD segment. The study showed that Indian financial derivatives segment had expanded phenomenally as compared to the global markets. The data showed an increase of six to seven times over the 10 years time period. The market turnover increased from Rs. 2365 crore in 2000-01 to Rs. 16807782.22 crore in 2012-13. Trading in derivatives surpassed cash segment in terms of turnover & number of contracts traded.

- Mantu kumar Mahalik et al (2014) examined price discovery and volatility spill overs in Indian spot and futures commodity markets by using cointegration, VECM and the bivariate EGARCH model. The research used four futures and spot indices of Multi-Commodity Exchange (MCX) and collected daily data from 12th June 2005 to 31st December 2008. The Vector Error Correction model indicated that commodity futures markets like natural logarithm of agriculture future price index (LAGRIFP), energy future price index (LENERGYFP), and aggregate commodity index (LCOMDEXFP) effectively served the price discovery function in the spot market resulting that there was a flow of information from future to spot commodity markets. While there was no cointegrating relationship between metal future price index (LMETALFP) and metal spot price index (LMETALSP). The bivariate GARCH model implied that the volatility spill lovers from future to the spot market were dominant in the case of LENERGY and LCOMDEX index.
- Ranganathan and Ananthakumar (2014) analyzed the efficiency of Indian soybean future market, it included long-run market efficiency and long-run unbiasedness, short-run market efficiency and short-run unbiasedness. The data on soybean spot and futures prices was collected from February 2004 to September 2011. In the long run, the soybean contract was unbiased but there were short-run market inefficiencies & a time-varying risk premium. In the short run, the weak form of market efficiency was rejected but the semi-strong market efficiency was not rejected. The two-month ahead futures price was generally higher than the expected spot price in future that implied the presence of a negative time-varying risk premium. The study concluded that the long hedgers seemed to agree at a higher price than the expected price to offset their price risk and the speculators derived a premium for bearing that risk. The premium varied with volatility and higher volatility in spot markets caused a much higher futures price than the expected spot price.
- Sanjay Sehgal and Wasim Ahmad (2015) examined the price discovery and volatility spillovers in spot and futures prices of four currencies (namely, USD/INR, EURO/INR,

GBP/INR and JPY/INR). Also, between futures prices of Multi-Commodity Stock Exchange (MCX-SX) and National Stock Exchange (NSE) in India. The data collection period was from February 01,2010 to February 29, 2012 (481 observations). The results showed that there was long-term equilibrium relationship between spot and futures and between futures markets. Futures price appeared to lead the spot price in the short-run. Volatility spillover results found that the movement of volatility spillover was from futures to spot in the short-run while spot to futures in the long-run. MCX-SX dominated over NSE in terms of volatility spillovers. The study concluded that there is an important role of futures market in price discovery & volatility spillovers in India's currency market.

- Singhal shelly (2017) analyzed the role of commodity derivatives as a defensive instrument in hedging portfolio risk. Also examined whether commodity derivatives provided the diversification benefit like developed commodity markets in the world. Monthly returns of SENSEX, Bond, MCX Comdex, MCX Energy, MCX Metal and MCX AGRI were collected for data analysis from 2006 to 2013. The results found bond with lowest risk & return combination. The risk of commodity indices was higher than SENSEX. However, return of all commodity indices was lower than SENSEX except for MCX Metal. MCX Metal showed highest risk & highest return. According to results, due to low degree of positive correlation, commodity futures provided the diversification benefit in combination with equity and bond in the portfolio. MCX Comdex and MCX Energy were positively related with inflation so they could be used for hedging against inflation. Optimal combination ratio for COMDEX and MCX Metal was 65% of SENSEX and 35% of commodity while for MCX Energy the ratio was 3:1 for SENSEX and for MCX AGRI the ratio was 7:3 respectively.
- Dr. Kiran Karande (2017) debated on the commencement of commodity options, whether this is the correct stage in the Indian financial system to start commodity options. Also studied the critical issue of determining the underlying asset for commodity options. It examined how commodity options should devolve, whether on futures, spot (Physical commodity) or be settled in cash. Paper showed that exchanges like TAIFEX & EUREX offer options on underlying commodity spot while major Exchanges like CME, LME, ICE and others offer commodity options on underlying commodity futures. This paper concurs with the SEBI view that commodity options should devolve into commodity futures at expiry. This is theoretically the best method

leading to price discovery and serving the purpose of hedging and price risk management for commodity options.

- Minakshi Bindal (2018) made a study on present scenario of derivative market in India for period 2010-2018.The research design is based on empirical analysis of financial derivatives in India with the use of secondary data. She also concluded that launch of equity derivatives in Indian market has been extremely encouraging & successful. Financial derivatives have earned a significant place in all financial instruments due to innovation & risk management.
- JAS Surendren (2019) studied the factors influencing the prices of commodity products in MCX derivative market. He found that commodity product prices are influenced by many factors such as demand & supply, taxes, regulations, global commodity markets, climate change, inflation and currency exchange rates. Trading in commodity market gives considerable profit with lower risk.
- Dr. Sreesha & Ayisha K (2019) studied the growth of financial derivatives in National stock exchange of India. The research design is descriptive based on secondary data. The period of data covers from 2001 to 2018 in case of stock derivatives, while for currency futures it covers data from 2008 to 2018 & for currency options 2010 to 2018.The study concluded that the derivative contracts in NSE are increasing significantly but not consistently.
- Velmurugan & Medathil (2019) had studied the hedging efficiency of gold option contracts in India. The paper considered data from October 17, 2017 to November 30, 2018. Data of gold option prices & spot market prices of gold had been taken from MCX database. This paper used regression through ordinary least square (OLS) estimators for testing hedging efficiency. The price of spot market used as the dependent variable (Y) & the price of options used as the independent variable (X). The data analysis showed a significant relationship between spot prices & market prices of gold and the R^2 showed that there was a hedging efficiency of 88%. The findings of the paper suggest that gold option contracts can be an effective instrument in tackling the price volatilities associated with gold prices.

4. GAP ANALYSIS

Gold futures & Gold option trading is a recent phenomenon in Indian financial market. SEBI allowed trading in commodity options in March 2017 & first gold options was launched on 17th

oct 2017 while Gold futures trading started in 2003. There are very few researches on commodity derivatives in India. Most of these researches focus on effects of derivatives on the implied volatility of the underlying asset, price discovery, hedging efficiency and issues & concerns of derivatives trading. There is no comparative research on gold futures and options. The research paper of Velmurugan & Medathil (2019) about hedging efficiency of gold option contracts in India recommended that a deep study on gold options trading in India is required with focus on finding the cause why trade volume of gold options is much lower than gold futures. Even after more than 30 months of launch, gold options are still not popular among investors. They don't have complete knowledge about specifications of options contracts and trading strategies using options & futures. This research tries to fill that knowledge gap and provide a guide book to investors.

Since a comparative study between gold options & futures is lacking in present body of knowledge so the research is justified in its originality & significance.

5. SCOPE OF THE STUDY

The current research will be a time frame study (Oct 2017- Sep 2022). The trading volumes of gold options & gold futures will be collected from MCX and primary data will be collected from brokerage firms through questionnaires. It will be used to identify the factors affecting the trading decisions relevant to gold options & gold futures. Also, this research will critically analyze the different trading strategies of gold options & gold futures.

6. OBJECTIVES OF THE STUDY

1. To critically analyze different trading strategies of Gold Options & Gold Futures.
2. To make a comparative analysis of trading volumes of Gold Options & Gold Futures (Oct 2017-Sep 2022).
3. To identify the factors affecting trading decisions relevant to Gold Options & Gold Futures.

7. RESEARCH METHODOLOGY

7.1. Research Design:

The methods to be used in this study are both descriptive & analytical in nature.

7.2. Sources of data:

Both primary data & secondary data will be used for this study. Primary data will be collected through questionnaires. Secondary data will be collected through website, Research papers, Newspapers, Articles, Journals etc.

This study will be a time frame study. The data of trading volumes of gold options & gold futures will be collected through MCX website for the time period of Oct 2017- Sep 2022. In this time period, we will analyse & compare the trading volumes of gold options & futures.

7.3. Sampling design:

The sample design of present study is as follows:

Universe: All brokerage firms registered with MCX in Rajasthan. At present 822 brokerage firms are registered with MCX in Rajasthan. (Source: Justdial).

Sampling area: Sample will be collected from Jaipur District because almost all brokerage firms have their branch in Jaipur district. In Jaipur district 148 brokerage firms are registered with MCX.

Sampling Unit: Brokerage firm registered with MCX.

Sample size: Using Cochran's formula for calculating sample size when population size is finite:

$$n = \frac{n_o}{1 + \frac{(n_o - 1)}{N}}$$

Here n_o = sample size for infinite population using Cochran's formula

$$n_o = \frac{z^2 * p(1-p)}{e^2}$$

Z = value of z distribution for desired confidence level

P = proportion of attribute in the population

e = margin of error

N = sampling population

The sample size with a 5% margin of error & 95% confidence level using the Cochran's formula for infinite population is 384.16 which is used as n_o and number of brokerage firms in Jaipur district is used as N. Optimum sample size using above formula is 107. So, the sample size will be 107 brokerage firms registered with MCX in Jaipur district.

Sampling Technique: Simple Random Sampling will be used to collect data.

7.4. Data Analysis:

SPSS software & Microsoft Office tools will be used to analyse the collected data.

8. LIMITATIONS OF THE STUDY

- The study will be limited to Multi Commodity Exchange (MCX) only. It will only study Gold futures & Gold options.
- The time frame of study will be limited to Oct 2017 – Sep 2022. Trading data will be collected from MCX website.
- The study has limitation of sample size, time, money and other resources.
- The respondents may not provide true information and may be reluctant to answer the questionnaire.

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